

Application No.: 10/706000
Docket No.: HP0087USNA

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REMARKS

The present application is directed towards a multi-layer substrate comprising a low-Tg polyimide layer, a high-Tg polyimide layer, and a conductive layer. The low Tg polyimide layer of the present invention comprises from 50 to 90 mole percent aliphatic diamine and has low z-axis dimensional stability.

No where in the cited art is this particular range of aliphatic diamine disclosed. In addition, the prior art does not teach that a range of z-axis dimensional stability is important for these type low-Tg polyimide bonding layers.

As such, the art cited by the Examiner does not teach or disclose all of the elements of the claimed invention.

In the present application, inventors surprisingly found that from 50-90 mole percent aliphatic diamine produces a polyimide bonding layer suitable for laminating metal to a high-Tg polyimide (see page 2, lines 12-15 and page 4, lines 11-14) where in the Tg of the polyimide bonding layer is from 150 to 200°C (see page 4, lines 15-16) and where the z-axis dimensional stability of the bonding layer is from about 80 to 150 ppm/°C (according to ASTM Method IPC-650 2.4.41) see at page 4 lines 11-14.

Conversely, the prior art of Kanakarajan '765 discloses (at col. 5, lines 1-3) that from 0 to 40 mole percent of the diamine component may *optionally* comprise an aliphatic diamine. In the 0 to 40 mole-percent diamine component of '765, it is taught (at col. 5, line 42) that hexamethylene diamine (an aliphatic diamine) is a possible diamine. What was critical to '765, however, is that the diamine component of the bonding layer (i.e., that portion comprising from 60 up to 100 mole percent) comprise an *aromatic ether diamine* (e.g., APB) see at col. 4, lines 43-47. On the other hand, the present application discloses that the polyimide bonding layer comprise from 50-90 mole percent aliphatic diamine, not an aromatic ether diamine.

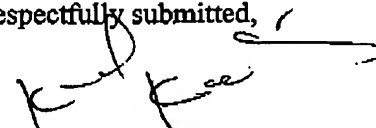
In addition, Rosenfeld '167 discloses (at col. 3, lines 60-63) that from about 5 to 50 mole percent of the diamine monomer is an aliphatic diamine. No where in '167 is z-axis dimensional stability discussed nor does the reference disclose that the diamine component must comprise from 50 to 90 mole percent aliphatic diamine.

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As such, applicants believe that the Claims are in a state of allowance. Since all currently pending claims having been shown to be in a condition for allowance, an office action in accordance therewith is respectfully solicited.

Respectfully submitted,


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